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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,003	01/08/2004	Takeshi Nakajima	04002 /LH	7123
1933 7590 02/29/2008 FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 220 Fifth Avenue 16TH Floor NEW YORK, NY 10001-7708			EXAMINER GE, YUZHEN	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 02/29/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/754,003		NAKAJIMA ET AL.	
	Examiner		Art Unit	
	Yuzhen Ge		2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-17, 19-26 and 28-35 is/are rejected.
- 7) ☒ Claim(s) 9, 18, 27 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Examiner's Remark

Applicant's amendment, filed on Feb. 6, 2008, has been received and entered into the file. The objection to specification and 101 rejections of claims 19-27 have been overcome in view of applicant's amendments/remarks and are hereby withdrawn. Claims 1-36 are pending.

Regarding applicant's argument that successively, a Dyadic Wavelet transform (not Discrete Wavelet transform) of at least level 1 is applied to the low frequency band component signals extracted from the first-converted image signals, the examiner would like to point out that according to common terminologies used in the art, a Dyadic wavelet transform is a wavelet transform following a geometric sequence of ratio 2. The discrete wavelet transform used by Matsuura is a dyadic wavelet transform (Fig. 5B). Therefore Matsuura teaches applying a Dyadic Wavelet transform of at least level 1 to the low frequency band component signals extracted from a first-converted image signals (Fig. 5B). To overcome the rejection, the examiner suggests rewriting the claims to clearly distinguish the claimed invention from the prior art.

Regarding applicant's argument that the disclosure of the Discrete Wavelet transform by Matsuura does not correspond to the Dyadic Wavelet transform recited in claim 1, the examiner would like to point out again **that the Discrete Wavelet transform disclosed by Matsuura is Dyadic**. Therefore Matsuura applies a dyadic wavelet transform as that in claim 1.

Regarding applicant's argument that Matsuura still would not disclose applying a dyadic wavelet transform of at least level 1 to low frequency band component signals included in the first-converted image signals, the examiner disagrees again. Matsuura teaches applying at least 1 level of dyadic wavelet transform to low frequency band component signals (or a second level

of transform, which is dyadic, is applied to the low frequency band component, Fig. 5B, the upper left four small boxes labeled LL, HL2, LH2, HH2, represents the results of applying at least level 1 of dyadic wavelet transform to low frequency band component signals). In fact, in the teaching of Matsuura, as many levels of dyadic wavelet transform as necessary can be applied to the low frequency band component depending on the application (col. 5, lines 42-48).

Therefore the 102 rejections of claims 1-7, 10-16, 19-25 and 28-34 and the 103 rejections of claims 8, 17, 26 and 35 have not been overcome in view of applicant's remarks and arguments. Again the examiner suggests amending the claims to distinguish the claimed invention from the conventional methods as indicated by the applicant to overcome the rejections.

Furthermore, for applicant's information, most commonly used wavelet transforms such as those used in JPEG-2000 are dyadic. Every limitation of claim 1 can be met also by the teaching of wavelet transform used in JPEG-2000. In fact, in the teaching of JPEG-2000, as many levels of dyadic wavelet transform as necessary can be applied to the low frequency band component depending on the application. Dyadic wavelet transforms are the most commonly used wavelet transforms because its property of following a geometric sequence of ratio 2.

Claim Rejections - 35 USC § 102

1. Claims 1-7, 10-16, 19-25 and 28-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura (US Patent 6,823,090 B2).

Regarding claim 1, Matsuura teaches a method for processing image signals, comprising:

reading an image recorded on a recording medium so as to generate image signals representing said image (Fig. 1, an image is stored in a memory and when processing, it is read, col. 7, lines 28-50);

applying, to said image signals, a multi-resolution conversion processing of at least level 1, which is capable of reducing an image size of said image signals, so as to generate first-converted image signals from said image signals (Figs. 4A-4B and 5B, col. 5, line 53-col. 6, line 16, the conversion is from Fig. 4A to Fig. 4B, 402 represents the reduced sized image, a dwt is a multi-resolution conversion); and

applying a Dyadic Wavelet transform of at least level 1 to low frequency band component signals included in said first-converted image signals, so as to generate second-converted image signals from said first-converted image signals (Figs. 4A-4B and 5B, col. 5, line 53-col. 6, line 16, Fig. 5B is the results of a Dyadic wavelet transform because the LL, HL2, LH2 and HH2 is the result of transforming LL1 after the first conversion, the transform/conversion is Dyadic because the transform shrinks both dimensions by 2).

wherein an image size of said first-converted image signals is smaller than the image size of said image signals (Figs. 4A-4D, the image 402 in Fig. 4B is smaller than that in Fig. 4A).

Regarding claim 2, Matsuura teaches the method of claim 1, further comprising: applying a first image processing to said second-converted image signals generated by applying said Dyadic Wavelet transform (col. 5, lines 42-48, Figs. 3-5B).

Regarding claim 3, Matsuura teaches the method of claim 1, further comprising: applying a first image processing to high frequency band component signals included in said second-converted image signals generated by applying said Dyadic Wavelet transform (col. 5, lines 42-48, Figs. 3-5B, the image processing can be applied to wavelet coefficients of higher level).

Regarding claim 4, Matsuura teaches the method of claim 3, wherein said first image processing comprises suppressing a signal intensity of a specific pixel, which fulfils a predetermined condition established in advance among pixels represented by said high frequency band component signals (col. 4, lines 16-col. 5, line 40, Figs. 3-5B).

Regarding claim 5, Matsuura teaches the method of claim 2, further comprising: applying a second image processing to said first-converted image signals generated by applying said multi-resolution conversion processing (Figs. 3-5B, col. 4, lines 16-col. 5, line 48, the processing can be applied to a plurality of levels and therefore for the image processing that applies to the second level is regarded as the second image processing).

Regarding claim 6, Matsuura teaches the method of claim 2, further comprising: applying a second image processing to high frequency band component signals included in said first-converted image signals generated by applying said multi-resolution conversion processing (Figs. 3-5B, col. 4, lines 16-col. 5, line 48, the processing can be applied to a plurality of levels and therefore for the image processing that applies to the second level is regarded as the second image processing).

Regarding claim 7, Matsuura teaches the method of claim 6, wherein said second image processing comprises suppressing a signal intensity of a specific pixel, which fulfils a predetermined condition established in advance among pixels represented by said high frequency band component signals (Figs. 3-5B, col. 4, line 16-col. 5, line 48).

Claims 10-16 are the corresponding apparatus claims of claims 1-7. Matsuura teaches an apparatus (Fig. 1). Thus Matsuura teaches claims 10-16 as evidently explained in the above-cited passages for claims 1-7.

Claims 19-25 are the corresponding computer readable storage medium claims of claims 1-7. Matsuura teaches a computer readable storage medium (Fig. 1, 109 in Fig. 1, col. 7, lines 33-62). Thus Matsuura teaches claims 19-25 as evidently explained in the above-cited passages for claims 1-7.

Claims 28-34 adds to claims 10-16 the following limitations:

- a processing section to process said image signals so as to generate an output image signals representing said output image; and

- a recording section to record said output image onto said outputting medium, based on said output image signals generated by said processing section.

Matsuura teaches

a processing section to process said image signals so as to generate an output image signals representing said output image (Fig. 1, col. 7, lines 28-32, a computer is a processor); and

a recording section to record said output image onto said outputting medium, based on said output image signals generated by said processing section (Fig. 1, image display is regarded as the outputting medium, col. 7, lines 28-32, a printer also prints to an outputting medium). Thus Matsuura teaches claims 28-34 as evidently explained in the above-cited passages.

Claim Rejections - 35 USC § 103

2. Claims 8, 17, 26, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura in view of Vincent (US Patent 6,741,739).

Regarding claim 8, Matsuura teaches the method of claim 1. However they do not explicitly teach wherein said multi-resolution conversion is an orthogonal wavelet conversion or a bi-orthogonal wavelet conversion. The linear wavelet transform used by Matsuura can be orthogonal also (col. 5, line 53-col. 6, line 39). In the same field of endeavor, Vincent teaches to use a multi-resolution conversion that is an orthogonal or a bi-orthogonal wavelet conversion to transform image signal (Figs. 14-16). It is desirable to use orthogonal or bi-orthogonal wavelet transform because of the mathematical properties of these transforms that enable efficient computation of coefficients. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use a multi-resolution conversion that is an

orthogonal wavelet conversion or a bi-orthogonal wavelet conversion so that efficient computation can be achieved.

Claim 17 is the corresponding apparatus claims of claim 8. Matsuura teaches an apparatus (Fig. 1). Thus Matsuura and Vincent teach claim 17 as evidently explained in the above-cited passages for claim 8.

Claim 26 is the corresponding computer readable storage medium claim of claim 8. Matsuura teaches a computer readable storage medium (Fig. 1, 109 of Fig. 1, col. 7, lines 33-62). Thus Matsuura and Vincent teach claim 26 as evidently explained in the above-cited passages for claim 8.

Claim 35 adds to claim 17 the following limitations:

a processing section to process said image signals so as to generate an output image signals representing said output image; and

a recording section to record said output image onto said outputting medium, based on said output image signals generated by said processing section.

Matsuura teaches

a processing section to process said image signals so as to generate an output image signals representing said output image (Fig. 1, col. 7, lines 28-32, a computer is a processor/processing section); and

a recording section to record said output image onto said outputting medium, based on said output image signals generated by said processing section (Fig. 1, image display is regarded as the outputting medium, col. 7, lines 28-32, a printer also prints to an outputting medium). Thus Matsuura and Vincent teach claim 35 as evidently explained in the above-cited passages.

Allowable Subject Matter

3. Claims 9, 18, 27, 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. A statement of reasons for the indication of allowable subject matter is presented in the previous office action and will not be repeated here.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuzhen Ge whose telephone number is 571-272 7636. The examiner can normally be reached on 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yuzhen Ge
Examiner
Art Unit 2624

WENPENG CHEN
PRIMARY EXAMINER



2/27/08